

CURRICULUM VITAE

Dennis T. Mangano, Ph.D., M.D.

Founder, Multicenter Study of Perioperative Ischemia (*McSPI*)

Clinician and Researcher, San Francisco Veterans Affairs Medical Center

Professor, University of California, San Francisco

Founder and Director, The Ischemia Research and Education Foundation

EDUCATION AND CERTIFICATION

Education:	B.S., summa cum laude (electrical engineering) Polytechnic Institute of Brooklyn, New York	1965
	M.S. (electrophysics), Polytechnic Institute of Brooklyn	1967
	Ph.D. (mathematics-physics), Polytechnic Institute of Brooklyn, New York	1971
	M.D., University of Miami, School of Medicine, Miami, Florida	1974
	Internship (internal medicine), University of Miami Medical Center, Miami, Florida	1974-75
	Residency (anesthesia), University of California, San Francisco, California	1975-77
Specialty Certification:		
	American Board of Anesthesiology	1978
	Licensure: California	1975

UNIVERSITY AND PUBLIC SERVICE

University of California Positions:

University of California,		
San Francisco:	Assistant Professor in Residence	1977-82
	Associate Professor in Residence	1982-87
	Vice-Chairman, Department of Anesthesia	1986-95
	Professor in Residence	1987-90
	Professor of Anesthesia	1990-98
	Leave-of-Absence	August 1998-present
Veterans Administration Medical Center:		
	Director, Surgical Intensive Care Unit	1977-90
	Staff Physician (Full-time)	1977-01

Outside Positions:

Polytechnic Institute of Brooklyn:	
Analog and digital computer research and development with Dr. John Truxal	1962-63
Bioengineering Department	1963-64
Teaching Staff	1964-65
Bell Telephone Laboratories, New Jersey:	
Research: Engineering, Acoustics, and Electromagnetics	1965-72
University of Miami, School of Medicine:	
Northern California Recruitment: Ph.D./M.D. Program	1975-88
Intramural:	
School of Medicine:	
Bioengineering Graduate Group (UCSF and UC Berkeley)	1983-98
Member Ad Hoc Peer Review Committees	1983-98
Physician Aid Committee of the Medical Staff	1985-91
Lectureship Committee, William K. Hamilton	1988-91
Distinguished Lectureship in Anesthesia	
Department of Anesthesia:	
Education Committee	1976-91
Computer Planning Committee	1977-79
Chairman, Annual Faculty Retreat Committee	1978-98
Research and Sabbatical Committee	1979-82
Ad Hoc Committees on Promotions	1980-98
Chairman, Morbidity and Mortality Committee	1984-86
Mandatory Fourth Year Residency Committee	1984-85
Finance Committee	1984-98
NMR Committee	1984-86
Evaluation of Non-clinical Time Committee	1984-86
Anesthesia Research Foundation	
Counselor at Large	1984-86
Second Vice President	1985-86
Physician Aid Committee	1985-98
Chairman	1985-90
Cardiothoracic Anesthesia Education	1985-91
Subcommittee, Clinical Education Committee	
Faculty Selection Committee	1986-87
Research Fellowship Committee	1986-87
First and Second Year Residents' Seminar Committee	1986-90
Research Committee	1986-98
Executive Advisory Committee	1986-98

	Counseling and Evaluation Committee	1986-91
	Program Evaluation Committee	1986-91
	Computer Committee	1988-91
	Ad Hoc Faculty Selection Committee	1989-98
	Departmental Meeting Committee	1989-91
VAMC:	Chairman, Emergency Medical Committee	1977-91
	Intensive Care Committee	1977-97
	Co-chairman	1984-86
	Chairman	1986-90
	Medical Pharmacology and Therapeutics	1981-85
	National Association of VA Physicians & Dentists	1997-01
Extramural:		
Local:	San Francisco Medical Society	1980-
	Anesthesia Steering Committee	1983-88
	Committee on the Well-Being of Physicians	1986-91
State:	California Society of Anesthesiologists	
	Board of Directors	
	District Director (San Francisco)	1980-83
	Education Committee 1986-	
	District Delegate (San Francisco)	1984-86
	California Medical Association	1982-
	San Francisco Bay Area Physicians Aid Network	1985-91
National:	American Society of Anesthesiologists,	
	Alternate Delegate to ASA (California)	1980-83
	Committee on Scientific Programs	1981-88
	Committee on National Meetings	1982-87
	Chairman, Subcommittee on Circulation	1982-85
	Committee on Research	1983-91
	Committee on Scientific Papers	1984-94
	Committee on Circulation-Experimental	1985-86
	9th World Congress of Anesthesiology	
	WFSA/ASA	
	Committee on Clinical Circulation	1988-92
	Committee on Refresher Courses	1988-90
	American Board of Anesthesiology	
	Question Writer, ABA/ASA Joint Council on	
	In-Training Examinations	1985-90
	Advisory Panel, Anesthesiology Section,	1985-90
	United States Pharmacopeial Convention	

Society of Cardiovascular Anesthesiologists Chairman, Research Committee	1995-96
New York Academy of Sciences	1995-
International College of Angiology	1997-
American Heart Association Cardio-Thoracic and Vascular Surgery Executive Committee	2000-2002
Editorial Services:	
Reviewer, <i>Anesthesiology</i>	1979-88
Reviewer, <i>Circulation</i>	1979-
Reviewer, ASA Circulation abstracts	1981-89
Reviewer, Society of Cardiovascular Anesthesiologists abstracts	1981-92
Reviewer, ASA Committee on Research Grants	1983-93
Reviewer, <i>Journal of American College of Cardiology</i>	1991-
Reviewer, <i>Journal of American Medical Association</i>	1991-
Associate Editor, <i>Journal of Cardiothoracic and Vascular Anesthesia</i>	
Editor, <i>Anesthesiology</i>	1988-97
Guest Editor, <i>European Heart Journal</i>	1989
Reviewer, <i>New England Journal of Medicine</i>	1991-
Reviewer, <i>Annals of Internal Medicine</i>	1991-
Reviewer, <i>Journal of the American Medical Association</i>	1991-
Associate Editor, <i>Contemporary Issues in Heart Failure: The Therapy of Acute Heart Failure Monograph</i>	1993
Editorial Board, <i>Annals of Cardiac Anaesthesia. An Official Publication of the Indian Association of Cardiovascular Thoracic Anaesthesiologists</i>	1998-

INVITED LECTURES AND FORUMS

On the use of the analog computer for modeling physical phenomena. Bell Laboratories, Whippany, New Jersey, August	1964
Some underlying mathematical concepts employed in computer modeling of physical phenomena. Bell Laboratories, Whippany, New Jersey, September	
On the propagation of acoustic signals in a random medium. Polytechnic Institute of Brooklyn, Brooklyn, New York, November	1965
Diffraction by a slit in a compressible plasma. National Academy of Sciences (URSI), Palo Alto, California, December	1966
Procedures for the design of an acoustic experiment. Bell Laboratories Whippany, New Jersey, June	1967

- Two lectures: Comparison of three schemes for filtering signals that have propagated through a random multipath medium; Signal gain comparison of three schemes for filtering signals that have propagated through a random multipath medium. Acoustical Society of America, Cleveland, Ohio, November 1968
- Low frequency, narrow band, multipath phase fluctuations in closely spaced sensors. Sound Symposium, San Diego, California, October 1969
- Spatial-temporal processing of acoustical signals. Bell Laboratories Whippany, New Jersey, July 1970
- Acoustic signal processing using multivariate analysis. Bell Laboratories Whippany, New Jersey, August
- An acoustic experiment demonstrating some unusual physical phenomena. Sound Symposium, Washington, D.C., November
- Communication over a class of spatially varying channels. International Symposium on Information Theory Monterey, California, January 1972
- Cardiac physiology lectures. The Courant Institute for Mathematical Sciences. New York University, New York, May, December
- Pulmonary thromboembolism. Cardiovascular Research Institute University of California, San Francisco, California, September 1977
- Pulmonary hypertension. Cardiovascular Research Institute University of California, San Francisco, California, June 1978
- Two presentations: Perioperative correlation of central venous pressure and pulmonary occluded pressure in patients undergoing coronary artery surgery; Variability of cardiac output during spontaneous ventilation. Annual Meeting, American Society of Anesthesiologists, Chicago, Illinois, October
- Variability of cardiac output during spontaneous ventilation. Annual Meeting, American Society of Anesthesiologists Chicago, Illinois, October
- Cardiac physiology lectures. The Courant Institute for Mathematical Sciences, New York University, New York October, December
- Myocardial function. Oak Knoll Naval Hospital, Oak Knoll, California, March 1979
- Four presentations: Pulmonary artery monitoring during cardiac surgery; Optimal filling pressures following cardiopulmonary bypass; Effect of bypass on myocardial compliance and performance; Effect of the pericardium on ventricular function in man. Annual Meeting, American Society of Anesthesiologists San Francisco, California, October
- Anesthesia for the pregnant patient with heart disease. Merritt

- Hospital, Oakland, California, November
 Pulmonary function in anesthesia evaluation. Natividad Medical
 Center of Salinas, Salinas, California, November
 Cardiac physiology lectures. The Courant Institute for Mathematical
 Sciences, New York University, New York City, New York, December
- Anesthesia, heart disease, and pregnancy. Society of Northern 1980
 California Anesthesiologists, San Francisco, California, June
 Ventricular function during myocardial revascularization.
 Cardiology Grand Rounds, Stanford, Palo Alto, June
 Course of ventricular dysfunction following myocardial
 revascularization in man. 7th World Congress of Anesthesiology
 Hamburg, Germany, September
- Three lectures: Pulmonary artery monitoring, indications, 1981
 techniques, risks; Assessment and treatment of serious heart
 disease; Perioperative management of the patient with pulmonary
 disease. Hospital Pulmonary Services Seminar
 Monterey, California, April
 Two lectures: A prospective evaluation of radial and femoral artery
 catheterization sites in critically ill patients; Heparin bonding
 to pulmonary artery catheters to eliminate thrombogenesis in man.
 Third World Congress on Intensive and Critical Care Medicine
 Washington, D.C., May
 Vasodilation during anesthesia, Anesthesia and Pharmacology-
 Update, 1981, San Francisco, California, September
 Two lectures: Preoperative assessment of the patient with ischemic
 heart disease; Alterations in ventricular function during coronary
 artery surgery. American Society of Anesthesiologists Workshop on
 Cardiovascular Surgery, San Francisco, California, September
 The patient with ischemic heart disease, Department of Anesthesia
 Letterman General Hospital, Presidio of San Francisco, California
 September
- Preoperative assessment of the cardiac patient. Anesthesia Conference
 Presbyterian Medical Center, San Francisco, California, September
 Alterations in ventricular function during coronary artery surgery.
 Cardiology-Cardiac Surgery Grand Rounds, Presbyterian Medical
 Center, San Francisco, California, October
 Three lectures: Preoperative assessment of the patient with coronary
 artery disease; Alteration of ventricular function during coronary
 artery surgery; Anesthetic considerations for the patient with
 valvular heart disease. University of Miami School of Medicine
 Miami, Florida, December
- Acute hemodynamic monitoring: Pulmonary artery monitoring 1982
 techniques, complications, indications, case studies. Eighth

Annual Vail Conference in Anesthesiology, Vail, Colorado, February
 The cardiac patient. Obstetrical Anesthesia: The State of the Art-1982
 San Francisco, California, March

Usefulness of pulmonary artery catheters during aortocoronary bypass
 surgery-Review. International Anesthesia Research Society
 San Francisco, California, March

Assessment of the patient with cardiac disease. Northern California
 Society of Anesthesiologists, San Francisco, California, March

Two lectures: Preoperative assessment-whom should we monitor
 invasively? Thrombogenesis of pulmonary-artery catheters,
 monitoring the circulation. Washington State Society of
 Anesthesiologists, Seattle, Washington, April

Ventricular systolic and diastolic function changes during coronary
 artery surgery. University of Washington, Seattle, Washington
 April

Preoperative assessment of the cardiac patient. Annual Meeting of
 the California Society of Anesthesiologists, San Diego, California
 June

Two lectures: Preoperative evaluation of the cardiac patient; Coming
 off cardiopulmonary bypass. Advances in Anesthesia for the Cardiac
 Patient, New York City, New York, June

Two lectures: Function of the pericardium in man: Effects on left
 ventricular volumes, pressures, and ejection; Non-invasive
 prediction of ventricular dysfunction: Coronary artery disease.
 Annual Meeting of the American Society of Anesthesiologists, Las
 Vegas, Nevada, October

Two lectures: Perioperative myocardial ischemia; Alteration in
 ventricular function during surgery. University of Oregon
 Portland, Oregon, January 1983

Two lectures: Ischemic heart disease; Myocardial function during
 surgery. University of Arizona, Tucson, Arizona, February

Ischemic heart disease. Letterman Army Medical Center, San
 Francisco, California, March

Obstetric anesthesia and medical diseases: Cardiac disease.
 Anesthesia for the High Risk Mother, Fetus, and Newborn. San
 Francisco, California, March

Three lectures: Assessment of the patient with ischemic heart
 disease; Alterations in ventricular function during cardiac
 surgery; Pulmonary hypertension. Harvard Medical School,
 Massachusetts General Hospital, Boston, Massachusetts, March

American versus European views of cardiac anesthesia. Society of
 Cardiovascular Anesthesiologists, Annual Meeting, San Diego,
 California, April

Pulmonary artery catheterization monitoring and techniques.
 California Society of Anesthesiologists, Hawaii, April

- Two lectures: Preoperative assessment-whom should we monitor invasively?; Thrombogenesis of pulmonary-artery catheters, monitoring the circulation. Washington State Society of Anesthesiologists, Seattle, Washington, April
- Ventricular systolic and diastolic function changes during coronary artery surgery. University of Washington, Seattle, Washington, April
- Two lectures: The patient and ischemic heart disease; Perioperative alteration of left ventricular function. American Society of Anesthesiologists Workshop on Anesthesia for Cardiovascular Surgery St. Louis, Missouri, May
- Assessment of the high risk patient. Medical-surgical Grand Rounds, Mt. Diablo Medical Center, Concord, California, June
- Preoperative assessment of the patient with cardiac disease. 29th Annual Anesthesiology Review Course, San Antonio, Texas, June
- Preoperative assessment of the cardiac patient. Annual Meeting of the California Society of Anesthesiologists, San Diego, California, June
- Two lectures: Preoperative evaluation of the cardiac patient; Coming off cardiopulmonary bypass. Advances in Anesthesia for the Cardiac Patient, New York, New York, June
- Anesthetic management of the pregnant patient with heart disease. University of California, Davis, California, August
- Assessment of the patient with myocardial ischemia. Refresher Course, Annual Meeting of the American Society of Anesthesiologists, Atlanta, Georgia, October
- Two lectures: Function of the pericardium in man: Effects on left-ventricular volumes, pressures, and ejection; Non-invasive prediction of ventricular dysfunction: Coronary artery disease. Annual Meeting of the American Society of Anesthesiologists, Atlanta, Georgia, October
- Two lectures: Preoperative evaluation of the patient with cardiac disease; Perioperative alteration of left ventricular function. 1984
Annual Utah Postgraduate Course in Anesthesiology, Utah, February
- Four lectures: Alteration of the patient with ischemic heart disease; Indication for invasive monitoring; Clinical hemodynamic case study; Hemodynamic case study II. Aspen Anesthesia, Aspen, Colorado, February
- Two lectures: Pulmonary catheterization and monitoring: Indications, techniques and examples; Assessment of the patient with ischemic heart disease. MTSA Faculty Seminars, Snowmass, Colorado, February
- The patient with ischemic heart disease. Act V-Anesthesia Care Team, Downstate Medical Center, New York City, New York, April
- Preoperative assessment of the patient with ischemic heart disease. American Society of Anesthesiologists Annual Meeting Refresher

- Course, New Orleans, Louisiana, October
- Three lectures: Anesthetic considerations for the patient with valvular heart disease; Alterations of ventricular function following cardiopulmonary bypass; Assessment of the patient with myocardial ischemia. University of California, Los Angeles, California, October
- Non-invasive cardiovascular monitoring (panel). 38th Postgraduate Assembly in Anesthesiology, New York State Society of Anesthesiologists, New York City, New York, December
- Preoperative predictors of cardiac morbidity. Surgical Grand Rounds, San Francisco General Hospital, San Francisco, California, January 1985
- Four lectures: Preoperative assessment of the patient with ischemic heart disease; Valvular heart disease; Invasive cardiac monitoring; Selective cardiac disease: Anesthetic considerations. Aspen Anesthesia, Aspen, Colorado, February
- Two lectures: Ischemic heart disease: Preoperative assessment using sophisticated tests; Intraoperative myocardial ischemia: Detection and treatment. American Society of Anesthesiologists Metropolitan Regional Refresher Course, San Francisco, California, February 1986
- Two lectures: Assessment of the patient with myocardial ischemia; Perioperative myocardial ischemia: Incidence, significance and detection. Aspen Anesthesia, Aspen, Colorado, February
- Two lectures: Ischemic heart disease: Assessment using sophisticated tests; Intraoperative ischemia: Detection and treatment. 31st Annual Postgraduate Course in Anesthesiology, Salt Lake City, Utah, February
- Impact of heart disease on anesthetic management: Lessons from cardiac anesthesia (panel). 60th Congress of the International Anesthesia Research Society, Las Vegas, Nevada, March
- Intraoperative Ischemia: Detection and outcome (panel moderator). Society of Cardiovascular Anesthesiologists, Montreal, Quebec, April
- Two lectures: Ischemic heart disease: Preoperative diagnostic tests; Pathophysiology of myocardial ischemia and its relationship to intraoperative detection techniques. Case discussions: Cardiac problems (panel). McGill Annual Review Course in Anaesthesia, Montreal, Quebec, May
- Two lectures: Preoperative assessment of patients with ischemic heart disease; Diagnosis and treatment of intraoperative ischemia. Letterman Army Medical Center, Presidio of San Francisco, California, June
- Four lectures: Preoperative assessment of patients with cardiovascular disease; Perioperative detection of myocardial ischemia; Detection

- and treatment of cardiac ischemia: Patients with valvular heart disease; Detection and treatment of cardiac ischemia: Pathophysiology of myocardial ischemia. California Society of Anesthesiologists Hawaiian Seminar on Clinical Anesthesia, Kauai, Hawaii, August
- The Life Cycle: Anesthetic Implications. The adult: Problems with organ failure (panel moderator). Department of Anesthesia Refresher Course, University of California, San Francisco, September
- Perioperative cardiac risk evaluation. American Society of Anesthesiologists Regional Refresher Course/Clinical Update Program, American Society of Anesthesiologists Annual Meeting, Las Vegas, Nevada, October
- Perioperative ischemia: A perspective. Anesthesia for the cardiac patient undergoing non-cardiac surgery (panel). Anesthesia for the cardiac patient undergoing non-cardiac surgery (panel moderator). American Society of Anesthesiologists Annual Meeting, Las Vegas, Nevada, October
- Two lectures: Preoperative assessment of the patient with ischemic heart disease; Diagnosis and therapy of perioperative myocardial ischemia. American Society of Anesthesiologists Regional Refresher Course, Scottsdale, Arizona, November
- Ischemic heart disease: Assessment using non-routine tests. 40th Postgraduate Assembly, New York State Society of Anesthesiologists, New York City, New York, December
- Perioperative ischemia. Anesthesia-Surgical Grand Rounds, University of California, Davis, California, February 1987
- Four lectures: Myocardial ischemia: A basic review; Preoperative predictors of myocardial infarction; Electrocardiographic detection of myocardial ischemia; Echocardiographic detection of myocardial ischemia. Aspen Anesthesia, Aspen, Colorado, February
- Controversies: Perioperative cardiac morbidity. Surgical Grand Rounds, University of California, San Francisco, California, February
- Clinical application of bioengineering techniques. Bioengineering Department, University of California, San Francisco, California, April
- Two lectures: Preoperative evaluation of cardiac function; The cardiac patient for non-cardiac surgery. 34th Annual Anesthesiology Review Course, Dannemiller Memorial Educational Foundation, San Antonio, Texas, June
- Two lectures: Preoperative assessment of the patient with ischemic heart disease; Perioperative myocardial ischemia: Diagnosis and therapy. Regional Refresher Course, American Society of Anesthesiologists, Chicago, Illinois, August
- Two lectures: Alteration of ventricular function during anesthesia and surgery; Perioperative cardiac morbidity. Astra Symposium, The Hague,

- The Netherlands, September
- Two lectures: Perioperative myocardial ischemia; Assessment of cardiac risk. Annual meeting, Swedish Society of Anesthesiologists, Umea, Sweden, September
- Evaluation of perioperative cardiac risk. 38th Annual Refresher Course, Clinical Update, American Society of Anesthesiologists, Atlanta, Georgia, October
- Perioperative myocardial ischemia: Necessity for measurement of the preoperative ischemic pattern. 15th Anniversary Meeting, Association of Cardiac Anesthesiologists, Atlanta, Georgia, October 1988
- Two lectures: Preoperative assessment of the patient with ischemic heart disease; Perioperative myocardial ischemia, diagnosis and therapy. Annual Charles S. Coakley Lectureship, George Washington University Medical Center, Washington, D.C., November
- Perioperative cardiac morbidity. Columbia University College of Physicians and Surgeons, New York, New York, November
- Two lectures: The patient with intraoperative myocardial ischemia; Anesthesia for vascular surgery. 41st Annual Postgraduate Assembly in Anesthesiology, New York State Society of Anesthesiologists, New York, New York, December
- Perioperative ischemia. Silent Myocardial Ischemia Conference, Tarpon Springs, Florida, January
- Four lectures: Pathophysiology of coronary artery disease; Assessment of cardiac risk; Diagnosis and therapy of myocardial ischemia I; Diagnosis and therapy of myocardial ischemia II. 1988 Aspen Anesthesia Conference, Aspen, Colorado, February
- Two lectures: Preoperative assessment of the patient with cardiac disease; Diagnosis and treatment of perioperative myocardial ischemia. Anesthesia Update 1988: Physiological and Pharmacological Topics of Concern for the Anesthesiologist, Medical College of Wisconsin, Copper Mountain, Colorado, February
- Risk factors in peripheral vascular surgery. Preoperative Care and Risk Management of Patients for General Thoracic and Peripheral Vascular Surgery Workshop, 10th Annual meeting, Society of Cardiovascular Anesthesiologists, New Orleans, Louisiana, April
- Chairperson: Coronary Artery Disease and Anesthesia, Clinical Forum, 9th World Congress of Anesthesiologists, Washington, D.C., May
- Coronary artery disease: Implications for the anesthesiologist (panel). 9th World Congress of Anesthesiologists, Washington, D.C., May
- Intraoperative use of the transesophageal echocardiogram. Grand Rounds, University of California, Davis Medical Center, Department of Anesthesiology, Davis, California, July
- Perioperative myocardial ischemia. Department of Anesthesiology, Kaiser Permanente Medical Center, San Francisco, California, July

- Chairperson: Workshop on Anesthesia: The Cardiac Patient Having Non-Cardiac Surgery, American Society of Anesthesiologists, San Diego, California, August
- Two lectures: Perioperative cardiac morbidity; Perioperative myocardial ischemia: New developments and controversies. Workshop on Anesthesia: The Cardiac Patient Having Non-Cardiac Surgery, American Society of Anesthesiologists, San Diego, California, August
- Two lectures: Preoperative assessment of the patient with ischemic heart disease; Perioperative myocardial ischemia: Detection and Therapy. Anesthesiology Symposium, The Patient With Cardiovascular Disease - Pre- and Intraoperative Anesthetic Implications, Department of Anesthesiology, Hospital of Saint Raphael, New Haven, Connecticut, September
- Perioperative Myocardial Ischemia: An update. 54th Annual Scientific Assembly, American College of Chest Physicians, Anaheim, California, October
- Two lectures: Preoperative cardiac work-up of the patient with heart disease; Current concepts on intraoperative ischemia monitoring. The patient with cardiac disease (panel). Grand rounds with the experts (panel). The Problem Patient, New York University Medical Center, Department of Anesthesiology Post-Annual Meeting Seminar, Palm Springs, California, October
- Four lectures: Patients with ischemic heart disease; Anesthesia for patients with valvular heart disease; Myocardial ischemia-diagnosis; Myocardial ischemia - therapy. California Society of Anesthesiologists Hawaiian Seminar, Maui, October
- Myocardial ischemia: Diagnosis and Therapy. Anesthesia Department, U.S. Naval Regional Medical Center, San Diego, California, November
- Two lectures: Perioperative cardiac morbidity; Preoperative assessment of the patient with ischemic heart disease. Department of Anesthesiology, University of California, San Diego, California, November
- Coronary artery disease and anesthesia: New developments and controversies. San Diego Society of Anesthesiologists, San Diego, California, November
- Perioperative myocardial ischemia: New developments and controversies. 1989
Duke Heart Center Dedication Lecture, Distinguished Lecture Series, Departments of Cardiology, Cardiac Surgery, and Anesthesiology
Duke University, Durham, North Carolina, January

- Four lectures: Today's questions on perioperative management of the high risk cardiac patient; Pathophysiology and preoperative risk assessment of the aging cardiac patient; Detection of myocardial ischemia; Summary and conclusions on the perioperative management of the high risk and elderly patient with ischemic heart disease. Invasive Treatment of Ischemic Heart Disease, International Symposium, Eindhoven, The Netherlands, April
- Perioperative myocardial ischemia: New developments and controversies. International Symposium on Frontiers in Cardiovascular Research, Ottawa, Ontario, Canada, May
- Perioperative myocardial ischemia: New developments and controversies. Transesophageal Echocardiography: Present Applications and Future Considerations, The University of Chicago School of Medicine, June
- Perioperative myocardial ischemia: Overview and risk analysis. The Changing Practice of Anesthesia, Department of Anesthesia, University of California, San Francisco, September
- Opioids and postoperative ischemia. Opioids in Anesthesia II, The Cleveland Clinic Foundation, Cleveland, Ohio, September
- Intraoperative myocardial ischemia: New developments and controversies. Annual Meeting, American Society of Anesthesiologists, New Orleans, Louisiana, October
- Two lectures: The anesthesiologist's viewpoint: Dynamic predictors of perioperative risk; Postoperative ischemia: Prolonged anesthesia as a treatment modality. Impaired myocardial performance: Evaluation and management in the cardiac surgical patient. Opinion Leaders' Symposium, Health Learning Systems, Phoenix, Arizona, October
- Controversies in perioperative cardiac ischaemia. The Mendelson Lecture. Anaesthetic Practice 1989. University of Toronto, Department of Anaesthesia, Toronto, Ontario, Canada, November
- Preoperative assessment of the patient with ischemic heart disease. 1990
Visiting Professor, University of Washington, Seattle, Department of Anesthesia, January
- Intraoperative myocardial ischemia: New developments and controversies. Anesthesia-Cardiology-Cardiac Surgery Grand Rounds. Pacific Presbyterian Medical Center, Department of Anesthesia, San Francisco, California, January
- Perioperative myocardial ischemia: New developments and controversies. Stanford University Medical Center, Department of Anesthesia, Stanford, California, January
- Perioperative myocardial ischemia: New developments and controversies. New Developments and Controversies, Aspen Anesthesia Conference (Program Chairman), Snowmass, Colorado, February

- Two lectures: Preoperative assessment of patients with coronary artery disease; Myocardial ischemia development and controversies. New Horizons in Anesthesiology, Emory University School of Medicine, Department of Anesthesiology, Beaver Run Resort, Breckenridge, Colorado, February
- Two lectures: Assessment of the patient with ischemic cardiac disease; Perioperative myocardial ischemia: Diagnosis and treatment. Anesthesiology and the Heart, 35th Annual Postgraduate Course in Anesthesiology, University of Utah School of Medicine, Department of Anesthesiology, The Cliff Conference Center, Snowbird, Utah, February
- Three lectures: Perioperative changes in ventricular function; Prolonged anesthesia as a therapy for postoperative ischemia; Perioperative ischemia-New developments and controversies. Management Problems of Anesthesia and Life Support in the Cardiac Patient. Emory University School of Medicine, Department of Anesthesiology, Division of Cardiothoracic Anesthesia, Atlanta, Georgia, March
- Preoperative evaluation. Anesthesiology: Comprehensive Review X. New York University Post-Graduate Medical School, New York, New York, March
- The role of intraoperative ST segment monitoring in patients with atherosclerotic disease. International Society of Electrophysiology, 15th Annual Conference, Virginia Beach, Virginia, April
- Thoracic aneurysm (panel); Mitral and aortic valve replacement (moderator). A Cardiac Anesthesia Clinical Forum. Maimonides Medical Center, Department of Anesthesiology New York, New York, May
- Three lectures: Preoperative evaluation of the patient with ischemic heart disease; Perioperative cardiac morbidity - New developments (Part I); Perioperative cardiac morbidity - Controversies (Part II). A Broad View of Clinically Relevant Areas in Anesthesia. 37th Annual Anesthesiology Review Course, Dannemiller Memorial Educational Foundation, San Antonio, Texas, June
- Two lectures: Preoperative assessment of the patient with ischemic heart disease; Perioperative myocardial ischemia-New developments and controversies. Case Conference. Visiting Professor, University of Pennsylvania, Department of Anesthesia, September
- Controversies in Clinical Management (panel moderator). The Changing Practice of Anesthesia. University of California, San Francisco, Department of Anesthesia, September
- Perioperative myocardial ischemia: New developments and controversies. ASA Refresher Course. American Society of Anesthesiologists, Annual Meeting. Las Vegas, October

- Four lectures: Preoperative assessment: Who is at risk?; Perioperative cardiac morbidity: New developments and controversies I; Perioperative cardiac morbidity: New developments and controversies II; Other heart diseases. Controversies in Clinical Management (Panelist). California Society of Anesthesiologists, Hawaiian Seminar, Maui, October-November
- Two lectures: Perioperative myocardial ischemia: New developments and controversies (I and II). Visiting Professor, New York University Medical Center, Department of Anesthesia, New York, November
- Two lectures: Perioperative myocardial ischemia: New developments and controversies (I and II). Visiting Professor, Harvard Medical School/ Department of Anesthesia, Boston, Massachusetts, December
- Two lectures: Perioperative cardiac morbidity; Anesthetic considerations: valvular heart disease. New Developments and Controversies, Aspen Anesthesia Conference (Program Chairman), Snowmass, Colorado, February 1991
- The usefulness of dipyridamole thallium scanning. Debates in vascular anesthesia (panel moderator). 13th Annual Meeting, Society of Cardiovascular Anesthesiologists, San Antonio, Texas, May
- Four lectures: Preoperative assessment of the patient with cardiac disease; Anesthesia for patients with valvular heart disease; Diagnosis and treatment of perioperative myocardial ischemia (I and II). Specialty Review in Anesthesiology. The Cook County Graduate School of Medicine, Chicago, Illinois, May
- Two lectures: Perioperative myocardial ischemia: New development (I and II). Anesthesiology Review Course, University of California, San Diego, California, May
- The natural history of SWMA. 5th Annual Paris in the Spring Meeting for Cardiothoracic and Vascular Anesthesiologists. Department of Anesthesiology, Mount Sinai School of Medicine, New York; Department of Anesthesiology and Critical Care, Pitié-Salpêtrière Medical School, University of Paris; and The World Association of Cardiac, Thoracic and Vascular Anesthesia, May
- Perioperative ischemia: An enormous market opportunity in the prevention and treatment of cardiac events in patients undergoing noncardiac surgery. Alex. Brown 16th Annual Health Care Seminar, Baltimore, Maryland, May
- Perioperative cardiac morbidity: New developments and controversies. Association of Anaesthetists Annual Scientific Meeting, Harrogate, England, September
- Four lectures: Myocardial ischemia: Anatomy, physiology, pathophysiology; Transesophageal echocardiography; Valvular heart disease; The postoperative period: New developments and controversies. The California Society of Anesthesiologists (Program Chairman), Hawaiian Seminar, Kauai, Hawaii, November

- Two lectures: Cardiac anesthesia. Making Clinical Sense from Research Controversies: What Really Matters? (Panelist presentation); Assessment of cardiac risk. Postgraduate Assembly in Anesthesiology, New York State Society of Anesthesiologists, New York, NY, December
- New Developments and Controversies, Aspen Anesthesia Conference 1992 (Program Chairman and panel moderator), Snowmass, Colorado February
- Three lectures: Preoperative assessment of the patient with cardiac disease; Perioperative cardiac morbidity: New developments and controversies (parts I and II). 18th Annual Vail Conference in Anesthesiology. University of Miami, School of Medicine, Vail, Colorado, February
- Two lectures: Perioperative myocardial ischemia: New developments and controversies; Incidence and clinical importance of postoperative myocardial ischemia. 12th Myron B. Laver Postgraduate Course, Department of Anaesthesia, University of Basel, Basel, Switzerland, March
- Plenary lecture: Perioperative cardiac morbidity: New developments and controversies. Surgical problems (panel moderator). 12th International Symposium on Intensive Care and Emergency Medicine. The Department of Intensive Care and Emergency Medicine, Erasme Hospital and the Belgian Society of Intensive Care and Emergency Medicine, Brussels, March
- Assessment of the patient for noncardiac surgery (panelist); Intraoperative monitoring for myocardial ischemia: Does 12-lead electrocardiography or transesophageal echocardiography have incremental value?; Effects of acadesine on perioperative cardiac morbidity in a placebo controlled, double blind study (original posters). 41st Annual Scientific Session, American College of Cardiology Dallas, Texas, April
- Perioperative cardiac morbidity (plenary lecture). 13th Congress of Circulation Control, Asahikawa Medical College, Department of Pharmacology, Asahikawa, Japan, May
- Visiting Professor, Hokkaido University, School of Medicine, Department of Anesthesiology, Sapporo, Japan, May
- New developments in perioperative cardiac morbidity. European Society of Anesthesiologists, Brussels, Belgium, May
- New insights into perioperative evaluation and postoperative care of high risk patients undergoing surgery. John J. Sampson Postgraduate Symposium. American Heart Association, San Francisco Chapter September
- Correlation between the severity of atherosclerosis of the ascending aorta and cerebral emboli during coronary artery bypass graft surgery (oral presentation). Anesthesia Session (co-moderator). The Brain and Cardiac Surgery, 2nd International Conference. The Bowman Gray School of Medicine of Wake Forest University and The Royal Postgraduate Medical School. Key West, Florida, September

- The all too common problem: Perioperative cardiac morbidity. Learning From the Past: Case Studies in Anesthesia. Kaiser Permanente Medical Center, San Francisco, September
- The CAD patient scheduled for non-cardiac surgery: What routine monitoring? Current Questions in Anesthesiology, Emergency Medicine, Critical Care and Pain Therapy. VIII Heidelberger International Symposium. Department of Anesthesiology, University of Heidelberg, Germany, November
- The high risk patient (panelist case presentation). The R.W. Robertazzi Memorial Panel, Postgraduate Assembly in Anesthesiology, New York State Society of Anesthesiologists, New York, NY, December
- Two lectures: Perioperative myocardial ischemia (Parts I and II), Anesthesia and the heart patient. Anesthesia Update 1993, Department of Anesthesia, University of California, San Diego, January 1993
- Perioperative cardiac morbidity. Department of Anesthesiology, University of Alabama, Birmingham, Alabama, February
- Two lectures: Principles of anaesthesia for the patient with valvular heart disease; Anaesthesia for non-cardiac surgery in the patient with coronary artery disease. Whistler Winter Anaesthesia Meeting, Department of Anaesthesia, Toronto General Hospital. Whistler, B.C., Canada, March
- Effect of adenosine on major cardiovascular outcomes with coronary artery bypass surgery. Also, Expert Clinical Review—panelist. American College of Cardiology, 42nd Annual Scientific Session, Anaheim, California, March
- The diagnosis and treatment of myocardial ischemia. Society of Cardiovascular Anesthesiologists, Refresher Course, Annual Meeting San Diego, California, April
- Perioperative risks in patients with cardiovascular diseases. California Society of Anesthesiologists, Annual Meeting, Monterey, California May
- Perioperative cardiac morbidity (guest lecture); New developments in perioperative cardiac morbidity (Chairman—symposium). Janssen Pharmaceutica Satellite Symposium, Beerse-Belgium, May
- Significance of the problem of perioperative cardiac morbidity (New Developments in Perioperative Cardiac Morbidity—Program Chairman) European Society of Anaesthesiologists, Founding Congress Brussels, Belgium, May
- Two lectures: Myocardial ischemia following surgery: Preliminary findings; Anesthesia for patients with valvular heart disease. MAPAR Conference, Paris, France, June
- Two lectures: Myocardial stunning: An overview; CNS dysfunction following cardiac surgery. Cardiopulmonary Bypass in the 90s—III. Emory University, Department of Anesthesiology, Division of Cardiothoracic Anesthesia. Atlanta, Georgia, September

- A clinical update on Adenosine regulating agents (Arasine). Clinical Advances in Biotechnology. Communitech. New York City, September
- The involvement of the heart, the brain and blood in the complications of surgery. Robert H. Still, M.D. Distinguished Lecturer. St. Luke's Hospital, Department of Surgery, and the Mayo Clinic, Department of Anesthesiology and Critical Care Medicine. Jacksonville, Florida, September
- Results of a multicenter study evaluating Arasine in patients undergoing cardiac surgery. Frontiers In Perioperative Myocardial Stunning (co-chairman). GEM Communications, Coronado, California, September\
- Anesthesia for the cardiac patient undergoing noncardiac surgery (panel). The Changing Practice of Anesthesia. University of California, Department of Anesthesia, San Francisco, California, October
- Two lectures: Assessing perioperative disease and risks for patients with coronary artery disease; Perioperative cardiac morbidity: Concepts and controversies. American Society of Anesthesiologists, Refresher Course, Washington, DC, October
- Perioperative cardiac morbidity. Krumperman Memorial Lecture, Recent Advances in Internal Medicine for the Anesthesiologist: Cardiac Medicine. Temple University School of Medicine, Department of Anesthesiology. Philadelphia, Pennsylvania, November
- Three lectures: Preoperative cardiac assessment of the high risk patient undergoing surgery; Mortality, morbidity and cost implications of adverse outcome in high risk surgical patients; New therapeutic approaches to perioperative myocardial infarction and stroke. Department of Anesthesia, Pennsylvania State University School of Medicine, Harrisburg, Pennsylvania, December
- Does anesthetic management affect the outcome of cardiac surgical patients? (panel); Clinical problem solving in anesthesia for major vascular surgery (panel). Postgraduate Assembly in Anesthesiology, New York State Society of Anesthesiologists, New York, NY, December
- Two lectures: Involvement of the heart, the brain and the blood in complications of surgery; Perioperative cardiac morbidity. California Society of Anesthesiologists 11th Annual Seminar, Whistler, British Columbia, February 1994
- Perioperative complications and costs: heart, brain and blood. Moderator, Cardiovascular Anesthesia, Poster Session. International Anesthesia Research Society, Orlando, Florida, March
- Involvement of the heart, the brain, and blood in the complications of surgery. AHA 12th Annual Scientific Seminar for Cardiovascular Nursing, San Francisco, California, March
- Outcome following surgery: Morbidity and cost. Third Annual Mayo Clinic Conference on Advances in Clinical Anesthesiology, Amelia Island, Florida, March
- Outcomes research: Heart attack and stroke. Association of Anaesthetists of Quebec, Annual Conference, Montreal, Quebec, Canada, April

Myocardial ischemia after coronary revascularization. Society of Cardiovascular Anesthesiologists, 16th Annual Meeting, Montreal, Quebec, Canada, April
Visiting Professor, Division of Anesthesiology, Cleveland Clinic Foundation, Cleveland, Ohio, May

Perioperative cardiac morbidity, new developments and controversies. The European Association of Cardiothoracic Anaesthesiologists, 9th Annual Meeting, Turku, Finland, June

Perioperative cardiac morbidity. Canadian Anaesthetists' Society, 51st Annual Meeting, Edmonton, Alberta, Canada, June

Cardiac morbidity in anesthesia. VIII International Anesthesia Symposium, Heidelberg, Germany

Case-management dilemmas (panelist); Cost containment—Panel—Context of capitation (panelist). Cardiopulmonary Bypass in the 90's—IV. Emory University, Department of Anesthesiology, Atlanta, Georgia

Involvement of the heart, brain and blood in the complications of surgery. 8th Annual Anesthesia and Critical Care Conference, The University of Chicago, Chicago, Illinois

Perioperative outcomes research: Heart attack and stroke. American College of Cardiology, 12th Annual Advances in Heart Disease, San Francisco, California

Two lectures: Perioperative ischemia: New developments; Perioperative myocardial infarction and stroke: Epidemiology, costs, and new therapies. 1995
Visiting Professor, Heart Institute, University of Ottawa, Department of Anesthesia, Ottawa, Canada

Perioperative risk assessment for vascular surgery patients. A Seminar Series on Basic Science in Peripheral Vascular Surgery 1994-95. Department of Surgery, University of California, San Francisco

Prevention of perioperative cardiac morbidity and mortality with α_2 agonists: potential for the future. European Society of Anesthesiologists, 3rd Congress, Paris, France

Myocardial ischemia after coronary revascularization (roundtable clinical case conference); Acadesine (Session, "New Drugs and the Heart") Society of Cardiovascular Anesthesiologists, Annual Meeting, Philadelphia, PA

Epidemiology and costs of perioperative myocardial ischemia. Council on Cardiothoracic and Vascular Surgery. American Heart Association, 68th Scientific Sessions. Anaheim, California

Four lectures: Perioperative myocardial infarction and stroke; Cardiovascular anesthesia; Preoperative assessment of the patient with cardiac disease; Perioperative myocardial ischaemia. Visiting Professor, Department of Anaesthesia, St. Vincent's Hospital, Melbourne, Australia

9th ASEAN Congress of Anaesthesiologists

Three lectures: Perioperative cardiac morbidity (Plenary Lecture); Managing pulmonary hypertension; Perioperative cardiac morbidity, Singapore

Assessment of cardiac surgical patients. First Asian Society of Cardiothoracic

Anesthesiologists. Singapore
 New drugs that may influence outcome. The New York State Society of
 Anesthesiologists, Postgraduate Assembly in Anesthesiology 49
 Chairperson's Remarks; Perioperative stroke and CNS dysfunction. IBC Ischemic
 Stroke Conference: Recent Advances in Understanding and Therapy
 Philadelphia

- Two lectures: New developments in perioperative management of myocardial infarction and stroke; Preoperative assessment of the patient with coronary artery disease: Indications for and clinical significance of tests of myocardial function; Costs of perioperative management of atherosclerosis (panel); Perioperative management of patients with cardiac disease (panel). 10th Annual Anesthesia Update (Medical College of Wisconsin). Copper Mountain, Colorado, February 1996
- Three lectures: Perioperative cardiac morbidity; Myocardial stunning—an overview; Perioperative myocardial ischemia and stroke—new developments. 41st Annual Postgraduate Course in Anesthesiology: Cardiovascular Anesthesia. University of Utah School of Medicine, Department of Anesthesiology Snowbird, Utah, February
- Three lectures: Reperfusion injury: History, etiology, and new therapies; Adenosine and myocardial protection; Heart, brain, and blood: Implications regarding costs, morbidity and new therapies. Society of Cardiovascular Anesthesiologists, Snowbird, Utah, March
- One lecture: Perioperative cardiac morbidity: 43rd Annual Meeting of Japan Society of Anesthesiology, Okayama, Japan, March
- Perioperative myocardial ischemia and stroke: New developments. 1996 Stengert Memorial Lecture. University of California Davis Medical Center, Sacramento, California, April
- Difficulty weaning from cardiopulmonary bypass; Myocardial protection Roundtable Clinical Case Conferences; Cardiopulmonary Bypass. Workshop. Society of Cardiovascular Anesthesiologists, Annual Meeting. Salt Lake City, Utah, May
- One lecture: 17th International Congress, Israel Society of Anesthesiologists
- One lecture: CNS dysfunction following CPB, May
- Two lectures: New developments in perioperative management of myocardial infarction and stroke; Preoperative assessment of the patient with coronary artery disease: Indications for and clinical significance of tests of myocardial function; Costs of perioperative management of atherosclerosis (panel); Perioperative management of patients with cardiac disease (panel). 10th Annual Anesthesia Update (Medical College of Wisconsin). Copper Mountain, Colorado, February

- Three lectures: Perioperative cardiac morbidity; Myocardial stunning-an overview; Perioperative myocardial ischemia and stroke-new developments. 41st Annual Postgraduate Course in Anesthesiology: Cardiovascular Anesthesia. University of Utah School of Medicine, Department of Anesthesiology Snowbird, Utah, February
- Three lectures: Reperfusion injury: History, etiology, and new therapies; Adenosine and myocardial protection; Heart, brain, and blood: Implications regarding costs, morbidity and new therapies. Society of Cardiovascular Anesthesiologists, Snowbird, Utah, March
- Perioperative cardiac morbidity: 43rd Annual Meeting of Japan Society Anesthesiology, Okayama, Japan, March
- Perioperative myocardial ischemia and stroke: New developments. 1996 Stengert Memorial Lecture. University of California Davis Medical Center, Sacramento, California, April
- Difficulty weaning from cardiopulmonary bypass; Myocardial protection Roundtable Clinical Case Conferences; Cardiopulmonary Bypass Workshop. Society of Cardiovascular Anesthesiologists, Annual Meeting. Salt Lake City, Utah, May
- Changing concepts in the treatment of diseases of the heart and brain (Plenary lecture); Reperfusion injury: emerging concepts and results of multicenter trials (Refresher Course lecture). 17th International Congress of the Israel Society of Anesthesiologists. Tel Aviv, Israel, June
- Outcomes Focusing Cardiac Surgery: Epidemiology, Morbidity and Costs AMSECT Region X Annual Fall Symposium, Lake Tahoe, Nevada, September
- Changing Practice of Anesthesia. Perioperative Myocardial Ischemia (speaker) University of California, San Francisco Medical Center, September
- Perioperative Stroke/Encephalopathy/Cognitive Dysfunction (Moderator) Review of Clinical Trials in Stroke, New Orleans, October
- Epidemiology of Ischemic Heart Disease: Influence on Perioperative Morbidity and Mortality (Speaker), Göttingen Germany, November
- Adverse outcomes after coronary bypass surgery: Clinical Results and Panel Discussion. Symposium-New Era in Coronary Artery Surgery. Society of Thoracic Surgeons Meeting, San Diego, California, February 1997
- Three Lectures: Cost Considerations in CABG Surgery: adenosine regulating drugs and myocardial protection. Myocardial Protection (Moderator); Intraoperative TEE and CPB (Moderator). SCA Update on Cardiopulmonary Bypass, Breckenridge, Colorado, March
- Two Lectures: Perioperative outcomes research; Outcomes of perioperative ischemia. Breakfast Roundtable: Difficulty Weaning from CPB (PBL). SCA Annual Meeting, Baltimore, Maryland, May
- Recent clinical trial developments in the diagnosis and treatment of perioperative myocardial infarction (Panel); Canadian Anaesthetists' Society, Vancouver, Canada June
- Examining adverse outcomes in cardiac surgery: The EPI 2 cardiac surgery database & McSPI Europe. Speaker: Association of Cardiothoracic Anaesthetists Meeting, Churchill College, Cambridge, England, June

Two Lectures: Perioperative myocardial infarction-New developments; Perioperative stroke and CNS dysfunction. Colorado Society of Anesthesiologists, Vail, Colorado, July

Trauma/perioperative management. Pulmonary Artery Catheterization & Clinical Outcomes (PACCO) Workshop, Sponsored jointly by NIH and FDA, Alexandria, Virginia, August

Three Lectures: Health economics and surgery; Perioperative myocardial infarction and stroke-new developments; New therapies for treatment and prevention of myocardial infarction following cardiac and non-cardiac surgery. Colombian Society of Anesthesia, Santa Marta, Colombia, August

Cilobradine/zatebradine. Opinion Leaders' Meeting (Panel), Chugai Biopharmaceuticals, San Diego, California, September

Surgical complications: Myocardial infarction & stroke.

The Changing Practice of Anesthesia 1997. San Francisco, California, September

Early detection/intervention of postoperative ischemia trial.

Clinical Trials Review Committee, NIH (NHLBI) Grant Reviewer.

Washington, D.C., October

New preventative therapies for perioperative myocardial infarction: beta blockers, adenosine regulating agents, thrombolytics (panel).

American Society of Anesthesiologists, San Diego, California, October

Preop Assessment for noncardiac surgery.

American Heart Association, Orlando, Florida, November

Multicenter outcome research: New advances in the treatment of myocardial infarction And stroke. 2nd Asian Society of Cardiothoracic Anaesthesia, Chiang Mai, Thailand, December

Multicenter outcome studies-Results of recent trials—Results of Recent Trials 1998

8th European Meeting of the French Society of Cardiology, Paris (abstract).

New Era in Cardiac Care. Minimally invasive techniques.

Rancho Mirage, CA January 8-11.

24th Biennial Congress, Honolulu, Hawaii. Perioperative myocardial infarction: New Advances. January 26-30 (oral presentation).

Hearing and Meeting: Advocacy Group Meeting with FDA, March 5.

3rd Annual Update on CPB. SCA Salt Lake City, Utah,

March 14-22, Snowbird, Utah

Myocardial Protection: The Acadesine data (oral presentation).

American College of Cardiology (ACC) Meeting March 30, Atlanta, GA.

Preoperative evaluation of the vascular surgery patient (oral presentation).

Society of Cardiovascular Anesthesiologists (SCA) April 23-29, Seattle, WA.

Is prophylactic beta blockade standard of care for noncardiac surgery patients at risk for coronary artery disease? (oral presentation)

Society of Cardiovascular Anesthesiologists (SCA).

How do we obtain outcome data? Randomized clinical trials vs. observational databases?

April 23-29, Seattle, WA

The California Society of Anesthesiologists (CSA) (abstract)

Advances in Anesthesia for Patients with Cardiovascular Disease.

The patient with severe atherosclerosis: New perioperative strategies for anesthesia management June 5

EACTA

Organ protection during cardiopulmonary bypass (focusing on the pressure and flow problems) (oral presentation). Bergen, Norway, June 17

The European Congress of Anaesthesiologists (ECA) (Chairperson Panel).

The future of perioperative outcomes research and clinical trials: Global challenges for the 21st century. Myocardial protection overview (oral presentation).

Frankfurt, Germany, June 30-July 11

The Sixth International Congress of Cardiothoracic & Vascular Anaesthesia. New strategies in risk stratification (oral presentation) Santiago, Chile, September 2-5.

The Changing Practice of Anesthesia UCSF. September 24-27.

The Case for perioperative beta blocker therapy (abstract & oral presentation).

American Society of Anesthesiologists (ASA).

Panel Discussion: "What price glory?" The cost of improving outcomes (abstract).

Estimating the current cost of adverse outcomes October 15-21 Orlando, FL.

Seventh Symposium on Clinical Trials UCSF 23. CME credits.

Design, methods and controversies October 22.

American Society of Anesthesiologists (ASA) (abstracts).

1999

Anti-ischemic therapy in the perioperative period
and Perioperative myocardial ischemia and infarction.

Phoenix, AZ, January 23-24.

Society of Gynecological Oncology Postgraduate Course.

Perioperative cardiac morbidity: Epidemiology costs & therapies.

San Francisco, CA, March 21.

Society of Cardiovascular Anesthesiologists (SCA).

Coronary Artery Surgery: Impact on quality of life-the beta blocker trials

Chicago, IL April 22-29 (abstract).

New Mexico Society of Anesthesiologists.

Anti-ischemic therapy in the perioperative period (oral presentation).

Santa Fe, NM, April 29-May 2.

Anesthesia Sevilla

Perioperative medicine in the new millennium Seville, Spain (oral presentation).

May 11-15.

EACTA

Perioperative myocardial infarction: State of the art (oral presentation).

Budapest, Hungary June 14-20.

IACTA 1999 Conference

Perioperative Medicine in the New Millennium

Symposium: Recent advances in cardiac anaesthesia

Breakfast Session: Perioperative Ischemia

Perioperative Stroke, Encephalopathy and Dysfunction

New Delhi, India, November 12-13.

- 45th Annual Postgraduate Course in Anesthesiology, Snowbird, Utah 2000
 An Overview of Cardiovascular Clinical Trials in Medicine
 A Final Common Pathway to Perioperative Injury I
 A Final Common Pathway to Perioperative Injury II
 February
 Pan Pacific Surgical Association, Searle Investigators Meeting
 Queen's Medical Center Course: Optimizing Pre-operative Evaluation and Care
 Assessing and Managing Cardiac Risk
 Panel/Q&A: Assessing and Managing Cardiac Risk
 Panel: Optimizing Pre-operative Evaluation and Care at the Queen's Medical Center
 Therapeutic Trials-Acute MI and Unstable Angina
 Waikiki, Hawaii January 29-30
- The 23rd Annual Society of Cardiovascular Anesthesiologists Meeting 2001
 Discussion and Panel Member:
 Improving Patient Safety During and Following Cardiac Surgery:
A Symposium on Monitoring and Avoiding Injury to the Heart in Cardiac Surgery
 Vancouver, BC, May 4
 Terumo Cardiovascular Conference: Monitoring and Improving Patient Safety
 During and Following Cardiac Surgery
 San Diego, CA, May 5
 EACTA 16th Annual Meeting European Association of Cardiothoracic Anaesthesiologists
 Ischemia Research and Education Foundation (Guest Lecture)
 Weimar, Germany, May 17
 Advanced Genomic Therapeutics Corporation—Gentiae Clinical Research
 Investigators' Meeting
 Weimar, May 19
 Pharmacia—National Anesthesia Advisory Board
 Pasadena, CA June 29-July 1
 2001 ASA Annual Meeting
 Lecture: Protection of the Heart (Panel Discussion)
 Annual *McSPI* Meeting (Founder's Message)
 New Orleans, LA October 12-17
 2001 Assembly Select Committee on Biotechnology Hearing
 Speaker: The Aging of Our Population and Impact on Vascular Diseases:
 A Recognized Problem—an Impending Crisis. October 19
 2001 ASA Annual Meeting, New Orleans, LA, October 11-17
McSPI Annual Meeting
McSPI Reception
 Panel Moderator: It's Protection, Protection, Protection:
Current Status of Organ Preservation in Cardiac Anesthesia Objectives
 Talk DTM: Protection of the Heart
 2001 American Heart Association Meeting, Anaheim, CA, November 10-14
 Meeting: Council on Cardiothoracic and Vascular Surgery 1:00-3:00—November 11
 Speaker: "Evolving Approaches to Reperfusion Injury in Cardiac Surgery Patients"-November 11
 Speaker: "How to Access Cardiac Risk Before Noncardiac Surgery" November 14

PROFESSIONAL ACTIVITIES

Awards and

Honors:

Eta Kappa Nu	
Tau Beta Pi	
Sigma Xi	
Polytechnic Institute of Brooklyn	
Sophomore Award in Electrical Engineering	1962
M. Gladstone Engineering Award	1965
Outstanding Service Award	1965
Julie Research Award, Julie Research Foundation	1965
General J. Sill Award for Military Leadership	1965
Bell Telephone Laboratories Degree Fellowship Award	1965
Eta Kappa Nu	
Most Outstanding Electrical Engineering	1965
Student in the United States, Honorable Mention	
Outstanding Freshman	1965
Kulka Research Award	1965
Who's Who in American Colleges and Universities	1965
Outstanding Intern Award, Department of Internal Medicine, University of Miami Medical Center	1974-75
University of California, San Francisco	
Chief Resident	1976-77
Teacher of the Year, Honorable Mention	1978
Teacher of the Year	1979
Other Awards: Western Electric, Ford, National Science Foundation, Bell Laboratories	
Who's Who in California	1981
Who's Who in the West 1981	
Congressional Record (v. 138, No. 100, p E2108)	1992
"VA Research Continues to Unravel Scientific Mysteries"	
Recognition of McSPI Research Group's studies of perioperative cardiac morbidity. Read into the Congressional Record by Hon. G.V. Montgomery.	
"The Best Doctors in America" (First edition)	1992-93
"The Best Doctors in America" (Second edition)	1994-95
"The Best Doctors in America" (Third edition)	1996
Membership at Large of the Executive Committee of the American Heart Association's Council on Cardiothoracic & Vascular Surgery, July 1, 2000	2000-
"Who's Who in American Business" Millennium Edition April/May 2000	
Invited Membership in the New York Academy of Sciences September 12, 2000	

Honorary Societies:	Association of Cardiac Anesthesiologists	1983-
	Association of University Anesthetists	1984-
Professional Societies:		
Regional:	Northern California Society of Anesthesiologists	1975-
	Northern California Society of Cardiac Anesthesiologists	1980
	San Francisco Medical Society	1982-
State:	California Society of Anesthesiologists	1975-
	California Medical Association	1977-
National:	Institute of Electrical and Electronic Engineers	1961-
	American Association for the Advancement of Science	1965-
	American Medical Association	1975-
	American Society of Anesthesiologists	1981-
	Society of Cardiovascular Anesthesiologists	1982-
	Association of Veterans Administration Anesthesiologists	1985-
International:	International Anesthesia Research Society	1975-
Visiting Professorships:	Department of Anesthesia, University of Texas Medical Center, Galveston, Texas	1979
	Department of Anesthesia, University of Pennsylvania Philadelphia, Pennsylvania	1980
	Department of Anesthesia, University of Miami School of Medicine, Miami, Florida	1981
	Department of Anesthesia, University of Washington School of Medicine, Seattle, Washington	1982
	Department of Anesthesia, Mason Clinic, Seattle, Washington	
	Department of Anesthesia, Oregon Health Sciences University, Portland, Oregon	1983
	Department of Anesthesiology, University of Arizona Tucson, Arizona	
	Department of Anesthesia, Massachusetts General Hospital Harvard Medical School, Boston, Massachusetts	
	Department of Anesthesia, University of California Davis, California	
	Department of Anesthesia, University of California Los Angeles, California	1984

Department of Anesthesia, University of California
 Davis, California

Department of Anesthesia, University of California 1988
 San Diego, California

Department of Anesthesia, Harvard Medical School 1990
 Boston, Mass.

Department of Anesthesia, University of Washington
 Seattle, Washington

Department of Anesthesia, University of Pennsylvania
 Philadelphia, Pennsylvania

Department of Anesthesia, New York University
 Medical Center, New York, NY

Department of Anesthesiology, School of Medicine, 1992
 Hokkaido University, Sapporo, Japan

Department of Anesthesiology, School of Medicine 1993
 University of Alabama, Birmingham, Alabama

Division of Anesthesiology, The Cleveland Clinic 1994
 Foundation, Cleveland, Ohio

Department of Anesthesia, University of Ottawa 1995
 Heart Institute, Ottawa, Canada

Department of Anaesthesia, St. Vincent's Hospital
 Melbourne, Australia

Anesthesia Critical Care Grand Rounds (Visiting Professor). 1996
 Beth Israel/Harvard Medical School. Beth Israel Hospital, Boston
 New Advances in Perioperative Myocardial Infarction,
 Stroke and Renal Dysfunction

Visiting Professor, Division of Anesthesiology, 1997
 UC San Diego, California, May
 Four Lectures: New developments in the treatment for
 perioperative myocardial infarction; Preoperative stroke-epidemiology,
 etiology and costs; Perioperative myocardial ischemia
 Preoperative cardiac assessment (informal discussion).

Recent developments in the treatment of perioperative myocardial infarction
 and stroke (Visiting Professor).
 The Anesthesiology's Way from XIX to XXI,
 Santiago de Compostela, Spain, October

Columbia Presbyterian Hospital, Papper Lecture, 1998
 The evolution of perioperative outcomes research:
 Perspectives for the New Millennium, November 12

The Association of Cardiothoracic Anaesthetists 1999
 Progress and Priorities The Royal College of Anaesthetists
 London, February 24-28

Royal College of Anaesthesists
 Symposium Royal College Symposium: The High Risk Surgical Patient,
 November 4-5 (Guest Lecturer)

Indian Association of Cardiovascular Thoracic Anaesthesiologists
 Perioperative Medicine in the New Millennium (invited lecturer)
 New Delhi, November 12-14

Continuing Education Committee, Auckland, NZ 2000
 Two Lectures:
 Perioperative Medicine in the Year 2000: Advances
 Diagnostic and Therapeutics.
 Perioperative Medicine: Stroke Encephalopathy and
 Cardiac Dysfunction
 Reperfusion Injury: The Inflammatory Response as a Final
 Common Pathway
 Auckland, NZ, November 14-18

The Medical College of Wisconsin (Visiting Professor) 2001
 One Lecture: Perioperative Medicine Development
 During the Last Three Decades
 January 30-31

Terumo Cardiovascular Conference
 One Lecture: Patient Outcomes in the Assessment of Injury
 Following Cardiac Surgery
 San Diego, California, May 5

The European Association of Cardiothoracic Anaesthesiologists
 16th Annual Meeting
 One Lecture: Ischemic Research and Education Foundation
 Weimar, Germany, May 16-19 (Guest Lecturer)

American Society of Anesthesiologists
 One Lecture: Protection of the Heart
 Panel: It's Protection, Protection, Protection: Current Status
 of Organ Preservation in Cardiac Anesthesia Objectives
 New Orleans, Louisiana, October 17

Assembly Select Committee on Biotechnology Hearing
 California Legislature
 Hearing Presentation: The Aging of Our Population and
 Impact on Vascular Diseases: A Recognized Problem
 Impending Crisis
 Hayward, California, October 19

Stanford University Medical School
 One Lecture: Incidence and Mechanism of Stroke Following
 Cardiopulmonary Bypass
 Palo Alto, California, November 7

American Heart Association
 Cardiovascular Seminar
 Anaheim, California, November 11

American Society of Anesthesiologists 2002
 25th Semi-annual Meeting *McSPI* Research Group
 Orlando, Florida—October 11-12
McSPI Founder's Message
 EPI-II—Steering Committee
 Ethics Committee
 Genomic Committee
 8th International Congress of Cardiothoracic and Vascular Anesthesia
 in conjunction with
 19th International Congress of The Israel Society of Anesthesiologists
 Keynote Lecture: November 11- 11:00 a.m.
 "Aspirin and mortality from coronary bypass surgery."
 Problem Based Learning Discussion
 Breakfast and Roundtable
 Non-cardiac surgery after acute ischemic event: preoperative evaluation
 Lecture: Optimizing medical therapy after MI: Is it enough?
 Satellite Symposium: November 12-16:00-18:00
 New Frontiers in Outcome Studies of Heart Surgery
 Inflammation of a mechanism of disease use, misuse and abuse of a
 convenient terminology
 Seminar, Transplantation Division, UCSF 2003
 Lecture—Perioperative Medicine—January 16
 SCA 8th Annual Update on Cardiopulmonary Bypass—March 18
 Moderator: Continental Breakfast: Reperfusion, Inflammation and
 Thrombosis in Cardiac Surgery
 SCA Annual Meeting and Annual *McSPI* Meeting April 24-30, Miami
 Scientific Presentation I-April 25, 26—Moderator—Dennis Mangano
 Various Committees of *McSPI*—April 26—
 Steering Committee, Publications Committee, Genomic Committee
 Leadership Committee of Council on Cardiothoracic and
 Vascular Surgery—May 3-8, Boston, MA
 Annual Meeting in conjunction with AATS 83rd Annual Meeting.
 Drug Information Association Meeting, June 15-19, San Antonio, TX
 Tuesday June 17-Presentation: "Considerations in designing large
 outcome studies in the development of cardiovascular agents."
 Wednesday June 18 invited lecturer—Dr. John Alexander Chairperson
 "Considerations in designing large outcome
 studies in the development of cardiovascular agents."

TEACHING

Approximately 1400 hours per year
Current, Past and Anticipated

Regular
Teaching:

Anesthesia 110 - Clinical Clerkship in Anesthesia
Anesthesia 140.01 - Clinical Anesthesia Elective
Anesthesia 140.03 - Intensive Care Clerkship
Anesthesia 178 - Anesthesiology
Anesthesia 400 - Anesthesia Staff Conferences
Anesthesia 450 - Anesthesia Clinical Work

1. Three full days per week teaching clinical anesthesia and/or intensive care with on-call teaching related to emergencies approximately four weeknights and one weekend per month. All clinical anesthesia is administered by post-doctoral trainees; therefore, all faculty clinical activities in the operating room involve one-on-one teaching.
2. Daily intensive care unit clinical rounds for anesthesia and surgery residents and intensive care unit nurses.
3. Weekly participation in departmental morbidity/mortality conference (two hours) with supervisory responsibility every fourth month (approximately 80 residents, faculty, and community anesthesiologists).
4. Student seminar (one hour) every week for two students.
5. Approximately three seminars (1-1/2 hours) annually for anesthesia residents and medical students.
6. Every other month, a two-hour intensive care nursing seminar.
7. Every month, an informal conference (two hours) for anesthesia residents and medical students at the VAMC.
8. Organization, supervision, and presentation of a special evening lecture series to second-year anesthesia residents. Every spring, four three-hour lectures are given.
9. Basic and advanced classes (one each) in cardiopulmonary resuscitation for 15 physicians and nurses once every two months (American Heart Association certification course).
10. Responsible for cardiovascular lecture series for first-, second-, and third-year residents. Approximately 35 lectures per year.

11. Supervised and organized a weekly conference (one hour) at the VAMC for clinical anesthesia for six residents, six faculty members, two medical students, and two nurses (1977-92).
12. Supervision of Ph.D. faculty advisees:
 Ida Tateo (UCB-UCSF Bioengineering Program) 1985-91
13. Supervision of research fellows:

Peter Rodriquez, M.D.	1981-82
Andrew Knight, M.D.	1986-87
Virginia Fegert, M.D.	1987-88
Paul Goehner, M.D.	1987-88
Jacqueline Leung, M.D.	1987-88
Davis Harris, M.D., F.F.A.R.C.S.	1987-89
Eric Helander, M.D.	1988
James Helman, M.D.	1988, 90-91
Brian O'Kelly, M.D.	1988
Nancy Mark, M.D.	1988-89
Dee Siliciano, M.D.	1988-89
Joseph Scaniffe, M.D.	1989
Mark Woiwood, M.D.	1989
Randy Smith, M.D.	1989
Eleanor Felipe, M.D.	1990-91
Peter Nosé, Ph.D., M.D.	1990-91
Arthur Wallace, M.D.	1991-92
Jerill Plunkett, M.D.	1991-92
Barry Bergquist, M.D.	1991-92
Sandra Weitz, M.D.	1991-92
Haywon Lieh, M.D.	1991-92
Claude Laflamme, M.D.	1993-94
Raymond Martineau, M.D.	1993-94
14. Supervision of nursing research:

Sandy Perez, R.N.	1981-82
Amy Ross, R.N.	1986-88
15. Supervision of students:

Mia Franks (Marin Nursing School)	1985
Ridgely Wong (UCSF Medical School)	1985-86
John Triedman (Harvard Medical School)	1985-86
Adrianna Valdovinos (UCSF Physiology Department)	1985-
Angela Heithaus (UCSF Physiology Department)	1985-
David Spitler (American Heart Association Summer Fellow)	1986
Amy Stern (American Heart Association Fellow)	1987
Laura Chan (UCSF Medical School)	1987

Robert Sperling	1989-90
Timothy Paul (American Heart Association)	1989
Teresa Tang (American Heart Association)	1989
Fanny Chan (American Heart Association)	1989
Edward Levine (American Heart Association)	1990
Kristie Novak (American Heart Association)	1990
Aileen Chan (American Heart Association)	1990
Linda Chu (American Heart Association)	1992
Mary Richardson (American Heart Association)	1992
Kyle Lemon (American Heart Association)	1992
Paul Wheeler (American Heart Association)	1992

Other

Teaching:

UC Berkeley/
UCSF Graduate
Division:

Bioengineering 280 - Clinical Aspects of Cardiac Function 1985-

RESEARCH

Funded Research:

Intraoperative Ischemia: Prediction, Detection, Outcome. American Heart Association, #85-N129; \$19,998 Renewed, #86-N131A—\$19,998	1985-86
Effects of Alteration of Preload and Afterload. UCSF Academic Senate—\$6,800	1985-86
Predictors of Perioperative Cardiac Morbidity. National Institutes of Health, RO1-HL36744-01 \$1,673,150	1986-91
Predictors of Perioperative Cardiac Morbidity National Institutes of Health, 1RO1-HL36744-01 \$1,495,592 (Competing renewal)	1991-97
Predictors of Adverse Outcome After CABG. National Institutes of Health, RO1-HL46329-01A2 \$2,622,784	1992-97

Pending:	Central Nervous System Dysfunction After Cardiac Surgery National Institutes of Health, #94-308-4194—\$1,424,726 Ischemia Research & Education Foundation—	2001-2006
	Institutional Factors in the Costs of CABG Surgery National Institutes of Health, #PA-00-111—\$458,332 AHRQ Health Services Research	2001-2003

Principal Investigator and Director, *SPI* Research Group

Dennis T. Mangano, Ph.D., M.D.

The Study of Perioperative Ischemia (*SPI*) Research Group is a multidisciplinary group investigating the incidence and characteristics of perioperative cardiac morbidity in high-risk patients undergoing noncardiac surgery.

Study Areas:

1. Perioperative ischemia during non-cardiac surgery (1,000 patients over five years).
2. Perioperative ischemia during cardiac surgery (500 patients over five years).

***SPI* Organization**

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Milton Hollenberg, M.D. (cardiology)

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Jack Levin, M.D. (clinical pathology)

Jeffrey Katz, M.D. (anesthesia)

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Orlo Clark, M.D. (medicine)

Gerald Goldstone, M.D. (surgery)

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Walter W. Hauck, Ph.D. (epidemiology/ biostatistics)

Nelson B. Schiller, M.D. (medicine)

Fraser Keith, M.D. (surgery)

Charles Richardson, Ph.D. (engineering)

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Elizabeth Layug, M.D.

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Esperanza Vilorio, B.S.

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Krzysztof Ziola, M.D.

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 H. Barrie Fairley, M.B., B.S.
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Laboratories: Electrocardiographic,
 echocardiographic,
 (Holter, real-time analysis),
 and computer-2500 square feet.
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The Multicenter Study of Perioperative Ischemia (*McSPI*) Research Group is comprised of 122 affiliated medical centers throughout the United States, 21 centers in Canada, 90 centers in Europe, 11 centers in Asia, 2 centers in Australia/New Zealand and another 6 centers worldwide. Initially, the group is focusing on identifying optimal diagnostic, therapeutic and cost-effective approaches to adverse perioperative cardiovascular and cerebrovascular outcomes.

Study Areas:

Research in perioperative myocardial infarction and stroke outcomes.

McSPI Organization-United States

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<i>Shadyside Medical Center</i>	Dr. Venkat Machiraju
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<i>VAMC - Milwaukee</i>	Dr. Niraj Nijhawan Dr. William Schmeling
<i>VAMC - Palo Alto</i>	Dr. Dr. Frances Johnson Dr. Jeffrey West, MD Dr. Paul Heidenreich
<i>VAMC - Portland</i>	Dr. Richard F. Davis Dr. Grace Chien
<i>VAMC - Reno</i>	Dr. William Graettinger
<i>VAMC - San Diego</i>	Dr. Justin Zivin
<i>VAMC - San Francisco</i>	Dr. Art Wallace Dr. Mickey Hollenberg Dr. Warren Browner Dr. Barry Massie Dr. Jack Levin
<i>VAMC - Tuscon</i>	Dr. Steven Goldman
<i>VAMC - West Los Angeles</i>	Dr. Richard Y. Z. Chen
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<i>Virginia Mason Clinic</i>	Dr. Julie Pollock Dr. James Helman
<i>Wake Forest University Physicians</i>	Dr. John W. Hammon
<i>Walter Reed Army Medical Center</i>	Dr. John Fontana
<i>Washington Adventist Hospital</i>	Dr. Mercedes Dullum
<i>Washington Hospital Center</i>	Dr. Steven Boyce, MD
<i>Washington University</i>	Dr. Charles W. Hogue Dr. Lawrence Cresswell Dr. Charles Hantler

Western Pennsylvania Hospital

Yale University School of Medicine

Dr. Alan H. Gradman

Dr. Paul Barash

Dr. Manuel Fontes

Dr. Susan Garwood

Dr. Michael Griffin

McSPI Organization - Europe

<u>Center</u>	<u>Investigator(s)</u>
<i>Academic Medical Center</i>	Dr. Harry Van Wezel
<i>Arhus University Hospital</i>	Dr. Carl-Johan Jakobsen
<i>Axepa Hospital Thessaloniki</i>	Dr. Tjamtjis Efstratios
<i>Bristol Royal Infirmary</i>	Dr. Christopher R. Monk Dr. Ian Davies Prof. Dr. C. Prys-Roberts
<i>Cambridge University Teaching Hospitals Trust</i>	Dr. M.J. Lindop
<i>Cardiothoracic Centre - Liverpool</i>	Dr. Mark A. Fox Dr. S.D. Thomas
<i>Centre Hospitalier Universitaire de Liege</i>	Dr. R. Larbuisson Prof. Dr. Maurice Lamy
<i>CHRU de Nantes - Hôtel-Dieu</i>	Dr. J.Y. Lepage Dr. O. Kick Prof. Dr. M. Pinaud
<i>CHRU de Nimes</i>	Prof. Dr. J.J. Eledjam
<i>CHRU Hôpital Arnaud de Villeneuve</i>	Dr. B. Calvet
<i>CHRU Hôpital G&R Laennec (Hôpital Nord)</i>	Dr. J. Moren Dr. T. Francois Dr. Y. Blanloeil Dr. E. Sellier Dr. G. Geay
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Journal Articles

1. Mangano DT: Lattice networks for phase correction. The Polytechnic Engineer, June 1963
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2. Fontes M, Mathew J, Aronson S and the Multicenter Study of Perioperative Ischemia (*McSPI*) Research Group: The relationship between isolated systolic hypertension and pulse pressure to perioperative ischemic outcomes (in revision).
3. Hofstetter B, Layug EL, Lapp WM, Mantel S, Wimmer M, Ott E, Conzen P and the European *McSPI* Research Group: Safety of mivazerol among patients undergoing vascular surgery: Concerns regarding central nervous system complications (analysis completed by W. Lapp).
4. Jain U, Ghoshal S, Mangano DT and the Multicenter Study of Perioperative Ischemia (*McSPI*) Research Group: Risk stratification for long-term mortality after noncardiac surgery (in revision).
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